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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/728,096	BERA, RAJENDRA KUMAR
	Examiner	Art Unit	
	Ted T. Vo	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2006*.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-13 and 15-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-13 and 15-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This action is in response to the amendment filed on 05/11/2006.

Abstract is amended and is identified as adding new subject mater.

Claims 1-8, 10-13, 15-18 are amended with the new subject matter.

Claims 1-8, 10-13, 15-18 are pending in the application.

Response to Arguments

2.   New subject matter is added to the abstract. This amendment and thus the specification is object

to under 35 U.S.C. 132 or 251 because of adding new matter. It requires Applicants to **cancel** the new

matter.

            - It should be noted that this application discusses the transformation of algebraic expressions

into a standard form, and in particular, the transformed expression is equivalent to the original one. The

specification does not discuss compilation of source code and does not describe how it will be compiled

into an executable code.   It should be noted that "compilation" is a process that requires various and

complicated techniques (standardized by Aho et al., and available online). This specification does not

describe any particular technique that shows **how source code to be compiled**, except it uses compiler

optimisation for a transformation of algebraic expressions into a standard form.

            As set forth in the specification, DISCLOSURE OF THE INVENTION, no such a new subject

matter **"compiling said source code into object code"**, but recently added in the abstract.

            See in abstract:

"The source code is compiled into object code, wherein the **compiling includes** the recasting, the

reducing, and the comparing. The method, apparatus, and computer program product may be used in

compiler optimization of source code and like computing tasks".

            Accordingly, the new subject matter must be deleted from the abstract and the claims.

- With respect to the argument to the rejection of 101: It should be noted that,

The claimed scope is defined in the preamble,

"method of determining, in a computer environment, the equivalence, if any, of two algebraic expressions for use in compiler optimisation of source code and like computing tasks".

Moreover, the add of **"compiling said source code into object code**, wherein said source code comprises said two algebraic expressions, and wherein said compiling comprises said recasting said reducing, and said comparing" is not functionally participated in the context of the preamble, or it is required as part of transformation *"two algebraic expressions for use in compiler optimisation of source code"* as defined under the scope of the claim. Therefore, this recitation is added with the purpose for intended use and does not relate to the scope. This recitation does not affect to functionality of the claim as a whole or cause any transition toward a practical thing under the scope of the claim. As noted in the example in MPEP: a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory. However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory. The claim is clearly preemption of algebraic rules, and even it includes the compilation but the compilation does nothing to the rules.

Thus, the adding of **"compiling said source code into object code"** is **another preemption** of 'preemption'. The definition of compilation is converting source code into object code, where 'preemption' herein is the process of manipulation the algebraic rules as original filed, and **another preemption** is recite a generic thing, "compiling into object code", without incorporated with the scope of the claim, or without being needed under such a scope.

> Examples of claimed processes that **do not achieve a practical application** include:
> - step of "updating alarm limits" found to constitute **changing the number value of a variable to represent the result of the calculation** (Parker v. Flook, 437 U.S. 584, 585, 198 USPQ 193, 195 (1978));
> - final step of "equating" the process outputs to the values of the last set of process inputs found to **constitute storing the result of calculations** (In re Gelnovatch, 595 F.2d 32, 41 n.7, 201 USPQ 136, 145 n.7 (CCPA 1979); and
> - step of **"transmitting electrical signals representing"** the result of calculations (In re De Castelet, 562 F.2d 1236, 1244, 195 USPQ 439, 446 (CCPA 1977) ("That the computer is instructed to transmit electrical signals, representing the results of its calculations, does not constitute the type of post solution activity' found in Flook, [437 U.S. 584, 198 USPQ 193 (1978)], and does not transform the claim into one for a process merely using an algorithm. The final transmitting step constitutes nothing more

than reading out the result of the calculations.")); and

-step of displaying a calculation as a gray code scale (In re Abele, 684 F.2d 902,

908, 214 USPQ 682, 687 (CCPA 1982)).

Note: **compiling said "source code" into object code**, if this source code included with **two algebraic**

expressions, is similarly to the case of "**transmitting electrical signals representing**" the result of

calculations (i.e.: compiling ~ transmitting); and similarly to the case of "**displaying a calculation as a**

gray code scale" (i.e.: compiling ~ displaying).

Therefore, the amendment to the claims with adding new subject matter fails to be statutory

claim. The rationale is addressed in the above analysis. Claims 1-8, 10-13, 15-18 remain rejected under

35 U.S.C 101.

- With respect to the argument to the rejection of double patenting. The amendment fails to over

come the rejection because the limitation added in the claimed is not supported in the specification.

Therefore, the scope of the claims remains defined as it is set forth in its preamble which covers the three

steps (a), (b) (c).

- The argument to the rejection under 35 USC 103 has been considered but not persuasive. The

claims are mere preemption of algebraic rules, where the preemption in a claim would not meet a

statutory claim; simply because the claims recite a fundamental true.

Specification

3.   The amendment to the abstract is object to because of adding new subject matter.

Double Patenting

4.   The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in
public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise
extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple
assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759
F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982);
In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163
USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5.   Claims 1, 6, 7 are provisionally rejected on the ground of nonstatutory double patenting over claim 15 of copending Application No. **11/231,091**, (U. S. Patent Application Publication No. 20060015550 A1). This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: Claims 1, 6 and 7 of the present application recite the steps/means (a), (b) (c), (c1) characterized for comparing to algebraic expressions; these steps/means are broadly enough to cover the simulation of a first set of algebraic equations and second set of algebraic equation limitations included with (a1) → (a7), and (b) 'comparing...' as in Claim 15 of U. S. Patent Application Publication No. 20060015550 A1.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

6.   Claims 1, 6 and 7 are rejected under the judicially created doctrine of obviousness-type double patenting as being respectively unpatentable over claim 1 of U. S. Patent No. **6,578,196 B1**. Although the conflicting claims are not identical, they are not patentably distinct from each other because: Claims 1, 6 and 7 recite the steps/means (a), (b) (c) and (c1) characterized for comparing to algebraic expressions; these steps/means are broadly enough to cover the checking method that include expressions recited

with steps recasting, reducing, and checking said reduced strings as in Claim 1 of U. S. Patent No.

6,578,196 B1.

Claim Rejections - 35 USC § 112

7.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8, 10-13, 15-18 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure

which is not enabling. The teaching of "**compiling said source code into object code**" is critical or

essential to the practice, but not included in the specification. The identified limitation "**compiling said**

source code into object code" amended in Claims 1, 6, 7, is new subject matter, where the specification

does not disclose, describe, or feature out this limitation in manner as claimed.

8.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8, 10-13, 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as the

invention.

As per Claims 1-8, 10-13, 15-18: Claims 1, 6, 7 and their dependent claims recite "**compiling**

said source code into object code" which is not described or disclosed in the specification. The Claim

lacks a support from the specification for how to compile a source code into object code. Since the

specification limits upon a transformation of algebraic expressions, the above limitation recited in the

claims fails particularly pointing out and distinctly claiming the subject matter which the applicant regards

as his invention/specification. The claims are thus indefinite.

Claim Rejections - 35 USC § 101

9.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent therefor,
> subject to the conditions and requirements of this title.

10.   The claims 1-8, 10-13, 15-18 are rejected under 35 U.S.C 101 because the claimed invention is

directed to non-statutory subject matter.

A claim is statutory if it meets practical, concrete, and tangible result.

Fact 1: See MPEP

(b) Statutory Process Claims
A claim that requires one or more acts to be performed defines a process. However, not
all processes are statutory under 35 U.S.C. 101. Schrader, 22 F.3d at 296, 30 USPQ2d
at 1460. To be statutory, a claimed computer-related process must either: (A) result in a
physical transformation outside the computer for which a practical application in the
technological arts is either disclosed in the specification or would have been known to a
skilled artisan (discussed in i) below), or (B) be limited to a practical application within
the technological arts (discussed in ii) below). See Diamond v. Diehr, 450 U.S. at 183-
84, 209 USPQ at 6 (quoting Cochrane v. Deener, 94 U.S. 780, 787-88 (1877)) ("A
[statutory] process is a mode of treatment of certain materials to produce a given result.
It is an act, or a series of acts, performed upon the subject-matter to be transformed and
reduced to a different state or thing.... The process requires that certain things should be
done with certain substances, and in a certain order; but the tools to be used in doing this
may be of secondary consequence."). See also Alappat, 33 F.3d at 1543, 31 USPQ2d at
1556-57 (quoting Diamond v. Diehr, 450 U.S. at 192, 209 USPQ at 10). See also id. at
1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle
does not defeat patentability of its practical applications") (citing O 'Reilly v. Morse, 56
U.S. (15 How.) at 114-19). If a physical transformation occurs outside the computer, a
disclosure that permits a skilled artisan to practice the claimed invention, i.e., to put it to a
practical use, is sufficient. On the other hand, it is necessary for the claimed invention taken
as a whole to produce a practical application if there is only a transformation of signals or
data inside a computer or if a process merely manipulates concepts or converts one set of
numbers into another.
A claimed process is clearly statutory if it results in a physical transformation outside the
computer, i.e., falls into one or both of the following specific categories ("safe harbors").

Fact 2: See MPEP
A process that merely manipulates an abstract idea or performs a purely mathematical

algorithm is nonstatutory despite the fact that it might inherently have some usefulness. In Sarkar, 588 F.2d at 1335, 200 USPQ at 139, the court explained why this approach must be followed:

No mathematical equation can be used, as a practical matter, without establishing and substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a "process" under 101. Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present in the formula into an embodiment of those ideas, or into an application of the formula, is foreclosed by the current state of the law.

For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See Alappat, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting Diamond v. Diehr, 450 U.S. at 192, 209 USPQ at 10). See also Alappat 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing O 'Reilly v. Morse, 56 U.S. (15 How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See AT &T, 172 F.3d at 1358, 50 USPQ2d at 1452. Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result (as in State Street, 149 F.3d at 1373, 47 USPQ2d at 1601) and/or when a specific machine is being claimed (as in Alappat, 33 F.3d at 1544, 31 USPQ2d at 1557 ("*> en< banc). For example, a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory. However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory.

Examples of this type of claimed statutory process include the following:

– A computerized method of optimally controlling transfer, storage and retrieval of data between cache and hard disk storage devices such that the most frequently used data is readily available.

– A method of controlling parallel processors to accomplish multi-tasking of several computing tasks to maximize computing efficiency. See, e.g., In re Bernhart, 417 F.2d 1395, 1400, 163 USPQ 611,616 (CCPA 1969).

– A method of making a word processor by storing an executable word processing application program in a general purpose digital computer's memory, and executing the stored program to impart word processing functionality to the general purpose digital computer by changing the state of the computer's arithmetic logic unit when program instructions of the word processing program are executed.

– A digital filtering process for removing noise from a digital signal comprising the steps of calculating a mathematical algorithm to produce a correction signal and subtracting the correction signal from the digital signal to remove the noise.

As per claims 1-5, 8:

Regarding term, "in a computer environment", it should be noted that thing such as a computer desk is

also a computer environment.

In Claim 1, as it defines in the preamble, "A method of determining, in a computer environment, the

equivalence, if any, of two **algebraic expressions**", this method is followed by steps (a), (b), and (c),

where (a), (b), and (c) are solely a manipulation of the two **algebraic expressions.** The three steps, at

first fail to be a tangible process, thus cannot produce a practical, concrete, and tangible result. The three

steps are merely manipulating and arranging the variables and the arithmetic symbols within the algebraic

expressions such as described in the specification. For example, to support for this claimed method, the

specification describes the performance of the method as $a \cdot (x-b)$ becomes $a^*x - a^*b$; a^n becomes $a \cdot a \cdot \ldots \cdot a$,

etc. Take $a \cdot (x-b)$ as an example: With the step (a), "recasting" shows a different arrangement of $a \cdot (x-b)$,

i.e. it becomes $a^*x - a^*b$. With the step (b), "reducing", it means the form $a^*x - a^*b$ would be simplified or

not. In this case, there no such a simplification because $a^*x - a^*b$ is already reduced. With the step (c),

"comparing", it means if $a^*x - a^*b$ is reduced then the new form must be the same or equivalence in value

with $a \cdot (x-b)$.

The compilation is general concept commonly defined as converting source code into object code. The

new adding of **"compiling said source code into object code"** is **another preemption** of 'preemption'.

The adding limitation is not incorporated or functionalized in the scope that is defined within algebraic

expression transformation.

It should be noted that, the claim as whole is mere preemption of algebraic rules. Compilation without a

specific application is also preemption. A Claim merely recites preemption would lead to a practical

application, required under the statute of 35 USC 101.

Furthermore, see examples set forth in MPEP, for claimed processes that **do not achieve a practical**

application:

> - step of **"transmitting electrical signals representing"** the result of calculations (In re De
> Castelet, 562 F.2d 1236, 1244, 195 USPQ 439, 446 (CCPA 1977) ("That the
> computer is instructed to transmit electrical signals, representing the results of its
> calculations, does not constitute the type of post solution activity' found in Flook, [437
> U.S. 584, 198 USPQ 193 (1978)], and does not transform the claim into one for a
> process merely using an algorithm. The final transmitting step constitutes nothing more
> than reading out the result of the calculations.")); and
> -step of displaying a calculation as a gray code scale (In re Abele, 684 F.2d 902,
> 908, 214 USPQ 682, 687 (CCPA 1982)).

Thus, we see that this claim is the manipulation of a mathematical expression, and all, including

"compiling the source code into object code", are only **preemptions** of the common rules in algebra.

The analysis shows there are no categories to classify the claim to any statutory one as given in the examples in the MPEP.

The Claim is merely the manipulation, particularly manipulating a mathematical formula/expression/principle. Thus, the Claim is nonstatutory because it preempts the rules of nature of math and it presents a mere abstract idea.

Claims 2-5, 8 merely recite the algebraic rules, fail to remedy the deficiency of Claim 1.

Claims 1-5, 8 are nonstatutory under 35 U.S.C 101.

As per claims 6, 10-13, and 7, 15-18:

Claims are rejected under nonstatutory in the same rationale as addressed above, where Claims 6, 10-13, and 7, 15-18 are based on preemption of mathematical principles/rules.

Claim Rejections - 35 USC § 103

11.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12.   Claims 1-8, 10-13, 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the rules of Algebra.

Given the broadest reasonable interpretation of followed claims in light of the specification.

As per Claim 1:

Official notice is taken that the Algebraic rules discloses the Claimed limitations:

The algebraic rules disclose,

A method of determining, in a computer environment, the equivalence, if any, of two algebraic

expressions for use in compiler optimisation of source code and like computing tasks, said method

comprising the steps of:

Algebra rules show (a): For example, take (a+b)(a-b), one expression and a^2-b^2, another expression, they

are equivalent and will be recasting into a form **a*a -a*b+a*b-b*b**, by using the known rules of algebra.

(a) recasting said expressions into a form of one or more token pairs arranged sequentially in a string,

each said token pair comprising an operator followed by an operand;

Algebra rules show (b): For example **a*a -a*b+a*b-b*b** is reduced by algebraic rules as **a*a-b*b**.

(b) reducing said strings in accordance with a set of predetermined simplifying rules;

Algebra rules show (c): For example (a+b)(a-b) = a*a-b*b; and a^2-b^2 is another expression of a*a-b*b. In

fact (a+b)(a-b) equals to a^2-b^2, equals *to* a*a -a*b+a*b-b*b.

(c) comparing the reduced strings by matching, to detect equivalence of the two algebraic expressions.

With limitation,

(c1) compiling said source code into object code, wherein said source code comprises said two algebraic

expressions, and wherein said compiling comprises said recasting said reducing, and said comparing.,

Official notice is also taken that compilation definition in general is to convert source code into object code

in various, complicated, and detailed techniques.

Therefore, it would be obvious to an ordinary in the art to apply rules/notation of algebra to

implement the claim, and it would be also obvious to an ordinary in the art to include preemption such as

compilation in the claim.

As per Claim 2: Algebraic rules disclose,

The method of claim 1,

whereby the recasting step (a) is preceded by a preconditioning step comprising, in relation to said

algebraic expressions, the following sub-steps according to whether a sub step applies: (da) deleting a

space in the expression; (db) removing a bracket in the expression by expanding a bracketed sub-

expressions; (dc) inserting a unitary operator at the start of the expression; (dd) recasting a power factor,

being a variable being raised to a power in the expression, in an alternate form as one of: (dda) the power

factor being expressed as the variable multiplied by itself as many times as the power, if the power is a positive integer; (ddb) the power factor being expressed as a reciprocal of the variable multiplied by itself as many times as an absolute value of the power, if the power is a negative integer; (ddc) the power factor being replaced by an appropriate function which can compute the power factor, if the power is not an integer; (de) recasting a constant in the expression in exponential format; (df) substituting a "+" operator in the expression by "+1*", a "1" being in exponential format, (dg) substituting a "-" operator in the expression by "-1*", a "1" being in exponential format; and (dh) recasting a "division by a constant" in the expression as multiplication by a reciprocal of the constant.

The example of (a+b)(a-b) and a^2-b^2 recasting into a form **a*a -a*b+a*b-b*b**, meet claim 2 because the claim 2 preempts the rules of algebra.

For example, algebraic rules:

(da): "a+ b" or "a+b" are the same (space deleting);

(db): (a+b) and a+b are the same (bracket removing);

(dc): a and +a are the same (inserting);

(dd): a^2 or a*a are the same (power recasting), and the same as to sub (dda), (ddb), (ddc);

(de): 12 and .12*10^2 are the same;

Further addressed to (df), (dg) , and (dh); these limitations are also applied to algebraic rules.

<u>As per Claim 3</u>: Algebraic rules disclose Claim 3 because Claim 1 recites all rules of algebra (See rationale addressed in Claim 2), where Claim 3 recites as,

The method of claim 1, whereby the simplifying rules in step (b) comprise: (ba) arranging token pairs into subgroups; (bb) arranging operand tokens in an arranged subgroup in order; (bc) reducing the ordered operands by consolidating one or more constants and eliminating variables of opposite effect to form reduced subgroups; and (bd) consolidating one or more multiple instances of similar subgroups, to produce a reduced string.

<u>As per Claim 4</u>: Algebraic rules disclose Claim 4 because Claim 4 recites all rules of algebra (See rationale addressed in Claim 2), where Claim 4 recites as, *The method of claim 1, whereby an algebraic expression whose equivalence is to be determined contains an aliased variable, said method comprising*

an additional sub-step of arranging an ordered list of aliases of the variable, and substituting a first alias in

the ordered list for all instances of the aliased variable in the expression.

As per Claim 5: Algebraic rules disclose Claim 5 because Claim 5 recites all rules of algebra (See

rationale addressed in Claim 2), where Claim 5 recites as, *The method according to claim 1, whereby an*

algebraic expression whose equivalence is to be determined contains a function, said method comprising

additional sub-steps of: reducing function arguments using the set of predetermined simplifying rules; and

replacing the function by a tagged string, said string designating a function name, parameter types, and

arguments, whereby the tag distinguishes the function name from a variable.

As per Claim 8: Algebraic rules disclose Claim 8 because Claim 8 recites all rules of algebra (See

rationale addressed in Claim 2).

As per Claim 6: Claim 6 recite an apparatus, which has functionality equivalent to Claim 1. See rationale

addressed in Claim 1.

As per Claims 10-13: As further limitations from Claim 6, Algebraic rules disclose claims 10-13. See

rationale addressed in Claim 2.

As per Claim 7: Claim 7 recites a computer program product, which has functionality equivalent to Claim

1. See rationale addressed in Claim 1.

As per Claims 15-18: As further limitations from Claim 7, Algebraic rules disclose claims 15-18. See

rationale addressed in Claim 2.

Conclusion

13.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office

action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of

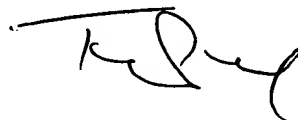the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted T. Vo
Primary Examiner
Art Unit 2191
July 21, 2006